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ABSTRACT

This paper explores the nature of content and language across the curriculum in relation to the Targets and Target-Related Assessment (TTRA) initiative. The TTRA is an assessment initiative designed to improve the quality of individual learning from Primary 1 to Secondary 5 in Chinese, English, and Mathematics in Hong Kong. A picture of content and language that is cross-curricular and subject-specific is offered. It is one in which context and language are interrelated. It depicts learning as the construction and elaboration of frameworks of conceptual and procedural knowledge and related frameworks of language through inquiring, thinking, problem-solving, communicating, and valuing. It depicts progress as the construction and elaboration of frameworks as a result of actively engaging in challenging uses of knowledge that are purposeful and contextualized and involve processes of thinking and doing which lead to products. Implications of the view of learning and language embodied in the TTRA framework impact students, teachers, principals, and the education system. (Contains 18 references.) (JP)

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CONTENT AND LANGUAGE IN TARGETS AND TARGET RELATED ASSESSMENT (TTRA) : IMPLICATIONS FOR SCHOOLS

John L. Clark and Angela Scarino

Hong Kong's Targets and Target-Related Assessment initiative is designed to improve the quality of individual learning in school, from Primary 1 to Secondary 5, initially in Chinese, English and Mathematics. It proposes to do this:

- by giving a clearer direction to teaching, learning and assessment by setting common explicit learning targets for all students for each stage of schooling
- by improving the means by which students work towards the targets through creating more effective task-centred Programmes of Study, based on what is known about how students learn best
- by improving the assessment and reporting of individual student performance and progress in learning for formative and summative purposes
- and by valuing each individual's progress in learning, however large or small, in order to motivate all students to further learning.

TTRA is being implemented in Primary schools shortly and will be introduced at Secondary level in September 1995.

In this paper we explore the nature of content and language across the curriculum in relation to the framework we have designed for the Targets and Target-Related Assessment (TTRA) initiative.

We shall first define what we mean by content and language and show how they are interrelated. Then, since the TTRA initiative is designed to improve the quality of **learning**, we shall outline principles and fundamental ways of learning which underpin the initiative.

Next, we shall briefly explore the nature of subjects within the curriculum, and outline a framework for designing learning in subjects across the curriculum.

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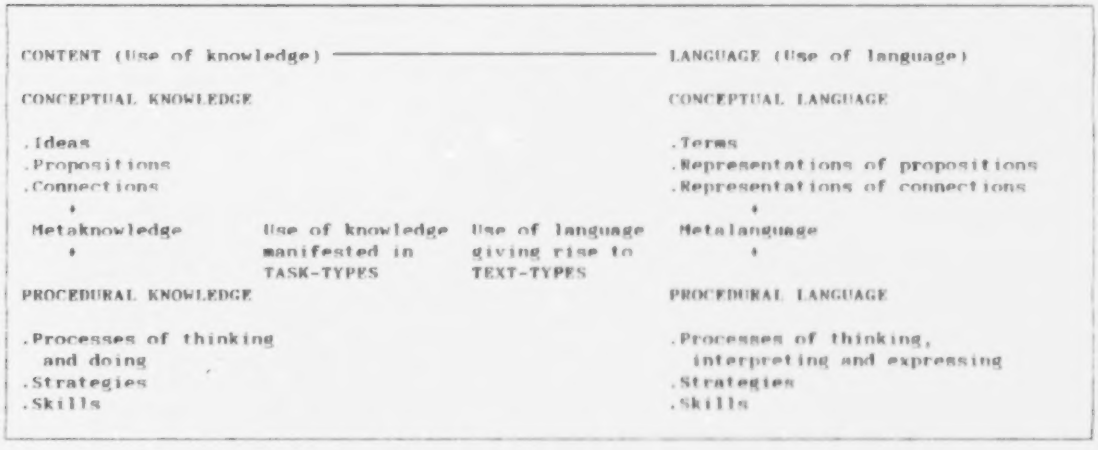
We shall then show how the relationship between content and language, the principles and fundamental ways of learning and the framework for designing learning across the curriculum underpin the 4 major components of the TTRA model, namely, the targets, learning tasks, assessment procedures and criteria for monitoring and reporting progress.

Finally, we will indicate some of the implications of all this for the education system as a whole, for schools, for teachers and for individual students.

To begin, we need to say what we mean by content and language. By content we mean the use of knowledge-conceptual and procedural knowledge. This includes knowledge of ideas, knowledge of procedures and knowledge about knowing itself i.e. knowledge **that** something is true, knowledge **how to** do something and knowledge **about** knowledge itself. For example, an aspect of content in mathematics is the use of knowledge of ideas such as number or space, the use of knowledge of how to carry out related procedures such as addition or measurement, and the use of knowledge about the nature and organisation of number and shape.

By language, we mean the use of language. Language is the means by which we construct, represent and communicate conceptual and procedural knowledge. The relationship between content and language is represented in a highly simplified manner in the diagram below.

Figure 1: Relationship between content and language



From the age at which thinking and language become intertwined, it becomes less and less possible for conceptual and procedural knowledge to be constructed in a language vacuum. And for language capability to be developed, there has to be a conceptual and procedural content.

Principles of learning

How then are knowledge and language constructed? In order to answer this question we have established a number of principles and concomitant fundamental ways of learning based on the available research evidence. These permeate all aspects of the TTRA curriculum framework.

The first principle is that **learning involves the active and purposeful process of constructing knowledge and language.**

Learning is an active, mental process - a process of thinking and doing. Students do not learn by simply absorbing knowledge. They need actively to construct it within their own minds. They construct knowledge by processing, questioning and interpreting, by themselves and in interaction with others, and they incorporate new knowledge by making connections between it and their existing framework. As they continue to learn they make stronger connections and thereby build more extended and more generative frameworks of knowledge. (Shuell, 1986; Nesher, 1986; Resnick, 1987; Putnam et. al., 1990) The connections which students make among concepts and procedures are constructed and expressed through language, so that they build ever stronger and more generative communicative frameworks for representing knowledge.

In addition, learning is contextualised. There is a limit to what one remembers of isolated facts and processes out of context (Miller, 1956). Knowledge is retained in the long term only when it is interconnected and embedded in some organising framework. The context in which the learning takes place is part of the framework. Students gradually need to learn to generalise knowledge from one context and apply it to others (Resnick, 1987). A focus on isolated facts and decontextualized skills inhibits the application of learning to practical activities and problem-solving in and beyond the school.

The second principle is that **learning involves a spiralling process.**

It is not linear. It requires the frequent revisiting of concepts and procedures which broaden and deepen so that the frameworks of knowledge are continually reorganised and extended as they accommodate new learning. Resnick (1987) highlights the fact that the kinds of activities associated with 'higher order thinking' should not be limited to the upper school (1987). As Donaldson (1978) has demonstrated, with appropriate contextual support higher-order thinking can be an integral part of learning even at the earliest stages.

The third principle is that **learning requires students to communicate in language and other forms of representation.**

Learning in all subjects is dependent upon language. It involves the development of conceptual and procedural knowledge, of language terms and realisations of propositions in texts.

Each curricular area and each of its subjects has its own specialised language and texts. Learning in each subject means learning to use the range of language and texts associated with the ideas and propositions of that subject. Through making connections across subjects and their languages, students work towards creating an overall, generative framework of knowledge and communication.

The fourth principle is that **learning involves the progression of every student through broad stages of thinking and knowing.** (Putnam, et. al., 1990; Pines, 1985).

Cross-cultural research indicates that the order in which these stages occur is generally much the same for all students in all cultures. However, the rate at which students progress through the stages and the way they perform on any particular task are influenced by experience within the culture and by the nature of the task. In the school setting, the progress of students cannot simply be assumed. It must be planned for, supported, monitored and described.

The fifth principle is that **learning involves developing positive attitudes and values.**

Students need to learn to set personal goals, to value knowledge, to work cooperatively with others and to become increasingly responsible for their own learning.

In summary, the process of learning is active, purposeful, contextualised; it involves continuously revisiting concepts and procedures and related language and texts, and is manifested in progress through stages. The product of learning is the construction of ever-improving frameworks of knowledge and language.

Learning, however, is not separate in each subject; concepts are shared across subjects, as are ways of learning, thinking and knowing. In the TTRA curriculum framework we have identified five fundamental, intertwining ways of learning across the curriculum, which have been derived from the principles of learning. They are: inquiring, thinking, problem-solving, communicating and valuing. Each can be described as follows:

- **Inquiring** involves discovering or constructing knowledge through questioning or testing a hypothesis.

- **Thinking** involves connecting concepts, abstracting patterns and constructing theories and arguments.

- **Problem-solving** involves identifying obstacles, selecting and trying out different procedures to solve problems, arriving at solutions, justifying and evaluating them.

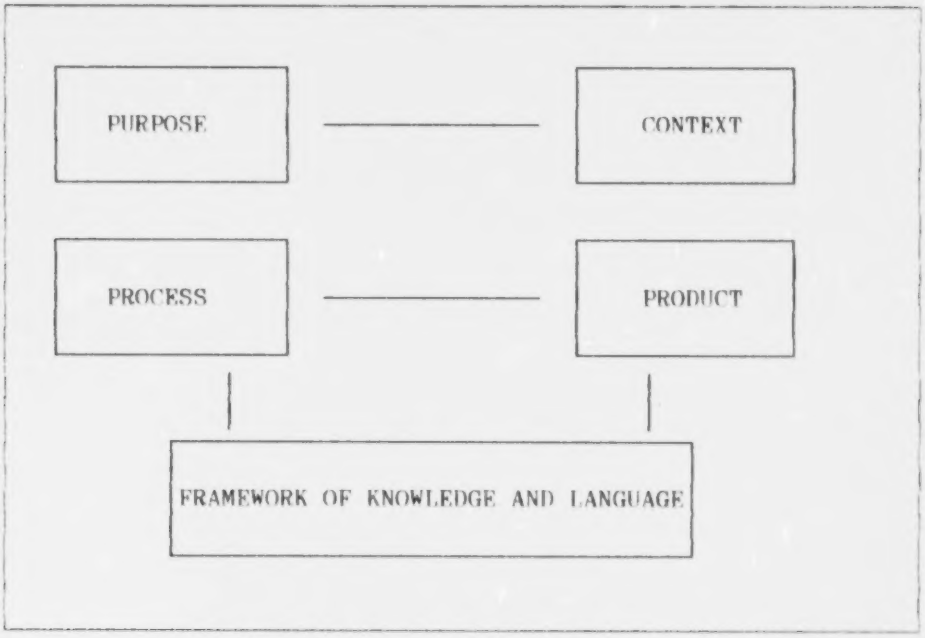
- **Communicating** involves interpreting and expressing meaning:
  - in spoken or written language for different purposes in ways appropriate to different people.
  - in representations such as numbers, mathematical or other symbols, diagrams, graphs, charts, models and simulations.
  - in aesthetic forms such as art, music or dance.

- **Valuing** involves developing positive attitudes towards thinking, and towards learning and using knowledge and language in subjects across the curriculum. It means developing a love of truth, beauty, creativity, honesty, fairness and tolerance for others in subjects across the curriculum.

While inquiring, thinking, communicating, problem-solving and valuing are **common** across all subjects in the curriculum, they are nevertheless realised rather differently in each subject. Problem-solving in geography, for example, involves investigative field trips, in science it involves conducting experiments to prove hypotheses, in mathematics it involves explaining through mathematical proof. What is it, then, that makes each subject different from the others? What in fact is a subject? We define a subject as a dynamic framework of conceptual and procedural knowledge and related language, which is forged into different shapes by the community of users of that subject (Brownell, 1966). The particular knowledge and language embedded in a subject is thus determined by what the users of the subject make it do. Thus, at any point in time, a subject is as it is, because of what its users make it do, in the same way as a language is as it is because of what the community of users makes it do. Subjects and languages develop and change as their users put them to new uses. The current pace of this change is such that it poses a major challenge to teachers who must keep up with the uses to which their subject is being put. Thus, doing and knowing are in a dynamic, interactive relationship, where doing determines knowing, and where what one knows (and doesn't know) at any one time defines what one can do.

In order to ensure that students construct a dynamic framework of knowledge and language for **using** subjects in and beyond the school, we have developed a framework for designing learning across the curriculum which is firmly based on how subjects are used.

Figure 2: Framework for designing learning across the curriculum



Through this framework, curriculum development groups for each subject are asked to set out:

- the purposes for which their subject is to be used in and beyond school
- the social, thematic and psychological contexts in which their subject is to be used
- the processes of thinking and doing that are involved in the use of the subject
- the products that are associated with the use of their subject
- the ever-improving frameworks of conceptual and procedural knowledge and related language that will be drawn upon and further extended and elaborated at different stages of development when using their subject.

Applying this framework to learning and using English in Hong Kong we have come up with three broad overlapping **purposes** which we refer to as **dimensions**. These are:

- the interpersonal dimension, whose major purpose is to enable students, through English, to establish and maintain relationships with others to socialise, to effect transactions and to solve problems with them
- the cognitive dimension, whose major purpose is to enable students, through English, to think and express thought, and to learn and use knowledge
- the imaginative or aesthetic dimension, whose major purpose is to enable students to enrich their lives, through enjoying and appreciating imaginative uses of English and through personal expression.

The **contexts** in which English is used in Hong Kong embrace the school, the workplace, various cross-cultural contexts, and the media. English is used with teachers, non Chinese-speaking friends or acquaintances, some officials, colleagues at work, etc. The thematic context in which English is used is most often academic or vocational in nature through it can of course be oriented to social and media-related concerns.

Processes of thinking and doing involved in using English cover, for example, gathering, organising and classifying information, comparing and contrasting ideas, drafting and redrafting reports, initiating and developing conversation and so on.

The overt **products** of English use include conversations, reports, stories, poems, and so on, while covert products encompass interpretation of something heard or read, a coherent series of thoughts, or newly internalised knowledge.

The **framework of knowledge and language** upon which students draw when they engage in the use of English encompasses knowledge of propositions, and task-types; and of realisations of propositions and text-types; and of processes, strategies and skills. As students revisit concepts and procedures embedded in ever-more challenging uses of English, the framework of knowledge and language grows.

Thus to the question: What should be the **content** of English language programmes in schools in Hong Kong? our answer is: those **uses** of English that will enable students to fulfil a range of relevant interpersonal, cognitive

and imaginative or aesthetic purposes. Within the cognitive dimension, the English classroom will connect with other classrooms, since it will deliberately set out to support and focus on the learning of the language, and text-types related to the use of knowledge in other subjects in the curriculum. Thus, in this dimension, the English classroom supports learning across the curriculum.

The framework for designing learning can be used for all subjects in the curriculum. In mathematics, for example, curriculum developers are asked to explore purposes for using mathematics, contexts in which mathematics is used, processes of mathematical thinking and doing, and the products associated with the use of mathematics such as numerical calculations, graphs, spatial representations, mathematical proofs, and the like.

And to the question: What should be the content of the mathematics programme? our answer is: those uses of mathematics that will enable students to fulfil a relevant range of purposes associated with the current use of mathematics, and through this to construct a knowledge of mathematical ideas, procedures and language.

The mathematics teacher is thus both a content and language teacher in the same way as the English teacher is both a language and content teacher. This is highlighted in the TTRA curriculum model through including **communication** as one of the fundamental strands in the learning of all subjects.

In summary, the dynamic relationship between content and language, and between knowing and doing, is at the heart of the principles and fundamental ways of learning and is embedded in the framework for designing learning across the curriculum. It is all of these, together, that underpin the design of teaching, learning and assessment in the TTRA curriculum framework, and I shall now hand over to Angela Scarino who will describe how they have been operationalised in the various components of the framework.

The TTRA curriculum framework comprises a number of key components. These include:

(1) the learning targets, organised as a hierarchy

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(2) learning tasks, organised as units and modules in Programmes of Study

(3) assessment of performance, elicited through target-related assessment tasks, judged in relation to criteria and bands of performance and reported through a profile.

I shall examine each in turn.

Learning targets

Learning targets, as conceptualised in the TTRA curriculum framework, describe what is to be learned and what will be assessed. They are designed to describe the most valued aspects of learning and using knowledge and language in the curriculum as a whole and in specific subjects. In order to capture the range of learning and use of knowledge and language, the targets embody the range of **purposes** for which knowledge is used in the curriculum and in specific subjects, and incorporate the range of **contexts**, the range of **processes**, leading to a range of typical **products**.

Learning targets in the TTRA curriculum framework are developed for each of four Key Stages of schooling from Primary 1 to Secondary 5. They capture progression in complexity, extendedness and application of learning. This progression is described in the increasing depth and range of purposes, contexts, processes, products and the increasing elaboration and flexibility of the framework knowledge and related language.

In addition, at each Key Stage, the learning targets are organised as a **hierarchy** from the most general and broad to the least general and broad; each level of the hierarchy derives from the level above. The most general learning target in the hierarchy is the learning target for the curriculum as a whole. All other targets are derived from this target, namely, learning targets for each curricular area and for each subject. The hierarchy of targets for specific subjects begins with the **target for the subject as a whole**. In English, the subject target may be expressed as follows:

> To develop and ever-improving capability to use English to communicate for a range of purposes, to learn, think, know; form judgements;

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develop values; reflect upon language in use, the use of language and language learning.

Within the subject target it is possible to identify fundamental **purposes** or **dimensions** for learning and using the subject. In English, as indicated earlier in this paper, it is suggested that three major and interrelated purposes for which English is learned and used are the interpersonal purpose, cognitive purpose and the imaginative or aesthetic purpose. Subordinate purposes are identified within each dimension. To continue with the example of English, the subordinate targets within the interpersonal dimension are social interaction and problem-solving with others; within the cognitive dimension we identify developing and using knowledge and within the aesthetic dimension, personal response and personal expression. At the next level of the hierarchy are the target-related objectives, which remain integrative, i.e. related to purposeful and contextualised use of the subject; at the lowest level of the hierarchy are specific knowledge objectives which relate to particular items of knowledge and language which need to be drawn upon in purposeful and contextualised use.

To demonstrate the notion of hierarchy in a more concrete manner, again drawing from English, a target-related objective in the social interaction target within the interpersonal dimension might be: to express interests, feelings, experiences, preferences and opinions through informal correspondence; specific knowledge objectives would include knowledge of the structure of texts such as letters, invitations and notes, knowledge of language and structures for describing likes, dislikes, interests, skills such as drafting and redrafting, and so on.

At each Key Stage, the targets at the upper levels of the hierarchy are designed to assist students to develop a conception of the subject as a whole, by requiring them to interconnect and use all aspects of their developing framework of knowledge and language.

Figure 2 depicts the structure of the hierarchy of learning targets for English.

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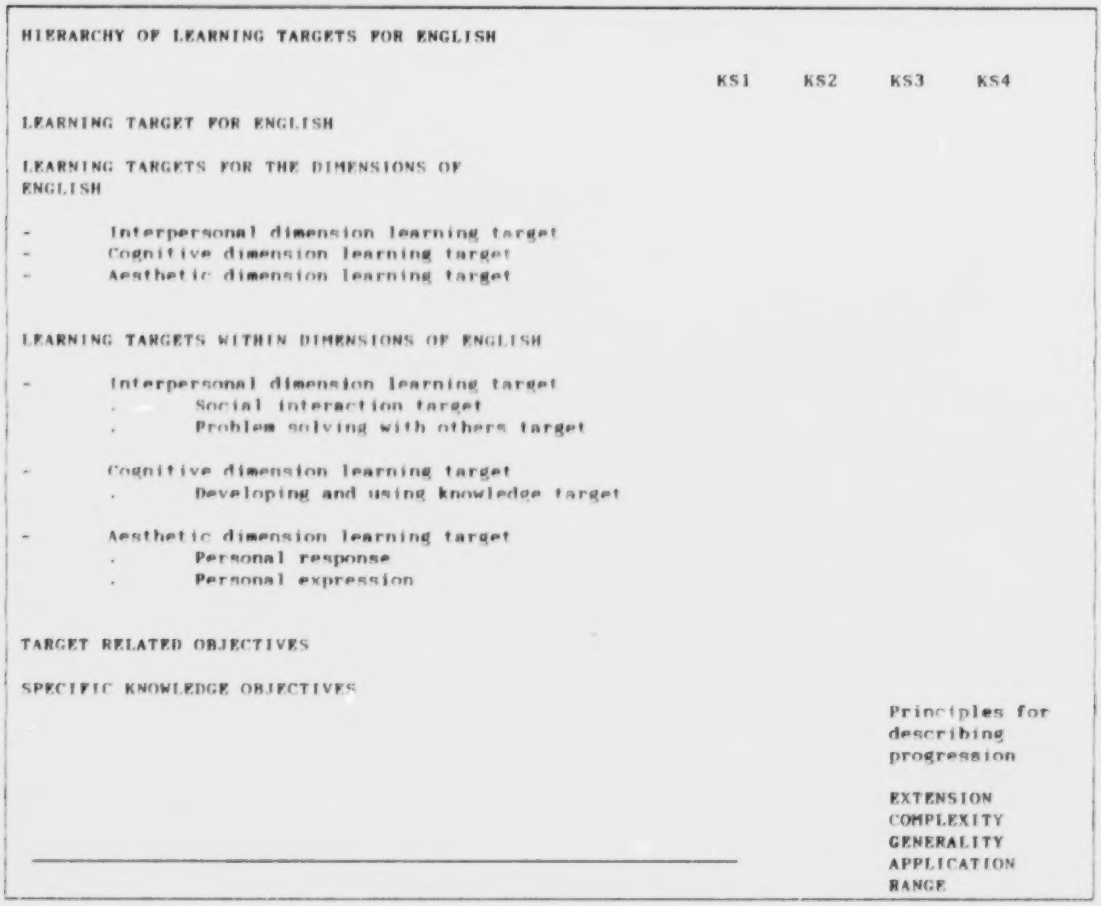
Figure 3: Structure of the hierarchy of learning targets for English



This hierarchical approach to organising targets is proposed for the curriculum and its subjects as a means for achieving coherence and consistency in the expression of targets within and across subjects. Furthermore, by adopting a common approach to target-setting across the curriculum, it becomes possible to connect the use of both knowledge and language across the whole curriculum and across subjects, thus strengthening student's learning.

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Learning tasks

Given the integrated and organic view of learning as thinking and using knowledge and language to construct and interconnect frameworks, task-oriented learning becomes a requirement. It is for this reason that we have chosen the **task** as the central unit of organisation for the TTRA curriculum framework. Each task is a purposeful and contextualized instance of learning and using knowledge and language. Thus a task draws together or integrates purpose, context, process, product and the framework of knowledge and language. As such, it is a microcosm of the framework for designing learning across the curriculum.

Tasks are the means through which students progress in learning towards the targets. Tasks may be designed for realising targets at all levels of the target hierarchy. At the lowest level of the hierarchy students are engaged in exercises which focus on specific items of knowledge; tasks designed at each subsequent level of the hierarchy will necessarily be broader and require students to make more and more connections. Tasks at the highest level of the hierarchy for specific subjects will be those which are designed to realise the subject target, i.e. the integrated use or application of the subject. These tasks are more complex and successful response on the part of students will involve much more than a single correct answer; students are likely to have to make their own assumptions and decisions, plan, organise and present their responses, demonstrate their thinking processes or what underlies their choices of action, give reasons for their conclusions and reflect upon the process.

An example of such a task for English at Secondary 3 level may be as follows:

> *Learners are required to plan possible itineraries for groups of tourists to Hong Kong, with special interests, for example, exchange students, businessmen or retired people. They prepare brochures for the trips including information on accommodation, sightseeing, entertainment, cultural interests, costs, etc. They compile a simple bilingual phrase book to be included with the brochures.*

In order to carry out this task students need to examine itineraries and brochures from travel agencies to gain insight into the text-type, document the needs and interests of particular groups, document what Hong Kong has to offer, consider partialities (e.g. days, costs, time of the year, size of the group, etc) as well as ways of making the package itself and the presentation attractive. They will need to engage in problem-posing, planning research to gather information from a range of print and human, sources, analysis, application to create a product, and documentation. In so doing they will necessarily draw upon, make connections and apply their conceptual and procedural knowledge, as well as interpret and use language.

Such integrated tasks are proposed for all learners at all phases of schooling; they are designed to emphasise realistic, but fair, complexity within the context of each particular phase of schooling. They are not to be seen as challenges only for the more able students. As Wiggins (1989) states, they are to be 'scaffolded up' not 'dumbed down' so that individual learners are given the support, or scaffolding, they require to enable them to engage in and learn from the challenge.

It is possible to extend this concept to the level of tasks for realising targets for the curriculum as a whole. This is the concept behind the 'exhibitions' i.e. the year-long series of tasks, coursework and adult supervision in preparation for a final presentation, being carried out in some secondary schools in the United States.

The *"Senior Project" at School Without Walls, Rochester NY*, for example, is as follows:

> *"The senior project..demonstrates that you have mastered the learning process... It is the process that is important, perhaps more important than the product itself. You should clearly demonstrate that you have been able to define a problem clearly; that you are able to understand the difference between process and product; and that you understand the importance of the form in which your work is presented.*
>
> *"What must it be? It must be the student's idea, it must be well thought out, it must yield a product which demonstrates growth and the development of newly acquired skills.*
>
> *"The Senior Project Proposal must follow this form:*
> *i. What I want to learn (this part is rally what your project is. Your project is* ***learning*** *how to build a desk, not the building of desk, for example.)*

ii. How Will I Go About Learning These Things?
iii. What Will the Project Be?
iv. What Will the Timeline Be?

The student also selects a "graduation committee" composed of six people as well as project advisor. The committee must include 2 students, 2 faculty and 2 non-family community members. Criteria for the diploma involve:

i. a complete transcript
ii. a portfolio: selected works by the student "representative of work and growth"
iii. certification by class advisor that Board of Education graduation requirements have been met
iv. Senior Project approved

(cited in Wiggins, u.d.)

A task, no matter how engaging, should not be seen as an isolated event. Learning is best effected when tasks are interrelated in some way to form a 'chunk' or **unit** of learning. Tasks in English, for example may be related by a common theme or topic (e.g. themes such as friendship, the environment, change and topics drawn from other areas of the curriculum) or by a common mode of thinking and doing (e.g. problem-solving, inquiring) or by a text-type (e.g. narrative, report). Organizing interrelated tasks into units assists students to perceive and make connections in their learning and thereby continually extend their framework of knowledge and related language. It is also possible for teachers to plan a number of interrelated units to form a **module**, so that students experience an even more extended chunk of learning. For example, a module on the theme of 'change' in English may include a unit on 'changes in people'; another on 'changes in my city' or 'changes in the water cycle'. By organising tasks in this way, cross-curricular connections are fostered as a means for extending students' learning. Many examples of units and modules are provided in the TTRA Programmes of Study for English.

Assessment

The integration of knowledge and language described for teaching and learning is mirrored in target-related assessment. Through formative and summative assessment teachers monitor the progress of individual students in relation to the learning targets at all levels of the hierarchy, they determine students' strengths and and areas for improvement, as well as ways of

assisting students to make further progress.

Student performance for summative purposes is elicited through a range of **assessment tasks**. These are designed on the basis of the same principles as learning tasks described earlier. A set of tasks should be selected or created to cover assessment of the range of targets. Thus, all aspects of student capability are elicited: knowledge of concepts, procedures and related language in each subject.

With regard to **judging** student performance, target-related assessment is based on criterion-referencing principles in which emphasis is placed on judging and describing student performance in relation to targets or criteria, rather than on rank-ordering of students relative to one another. Three generic criteria for judging performance in all subjects across the TTRA curriculum are:

- effectiveness of the product in relation to the purpose and context expressed in the task,
- effectiveness of the process of thinking and doing,
- effectiveness of the use of the framework of knowledge and language.

These criteria are rendered more specific to apply to particular task-types in each subject and still more specific to apply to a particular task within a task-type category. For example, two task-types identified in the aesthetic dimension in English are personal response and personal expression. As an example, the criteria for judging performance on personal expression are as follows:

1. Overall effectiveness: effectiveness of the personal expression in fulfilling the purpose set out in the task.

2. Effectiveness of the process of thinking and doing
   - expressing ideas and feelings in texts
     e.g. - organising and planning expression of ideas and feelings
     - considering the target audience
     - using a variety of drafting and redrafting techniques
     - drawing connections among ideas

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- elaborating ideas and feelings
- substantiating personal expression of ideas and feelings
- self-monitoring of the expression of ideas and feelings.

3. Effectiveness of the use of knowledge and language
   - observing the conventions of the text-type
   - accuracy, fluency, range, relevance and comprehensiveness of ideas and of associated language.

Progress in performance is described through a series of **bands of performance.** Bands are broad descriptions of typical growth in performance. They represent a long-term map of progress in learning and using a particular subject. At each of eight levels, they describe typical purposes and contexts, processes and products and the scope and quality of knowledge and related language for each of the major task-types and for the integrated use of the subject. In English, the structure of the descriptions of bands of performance is as depicted in Figure 3.

Figure 4: Structure of Bands of Performance for English

BAND 1-8

1. Interpersonal
   Social interaction
   Problem solving with others

2. Cognitive
   Developing and using knowledge

3. Aesthetic
   Personal response
   Personal expression

4. Integrated use of English

described in terms of:

- what students do? (i.e. product)
- how they do it? (i.e. process)
- to what extent?
- how well?

In the bands of performance for English we are attempting to describe the integration of learning and using knowledge and language. The descriptions are currently at an early draft stage, however, and will be subject to an extensive process of refinement. The following extract from the working draft

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description of Band of Performance 4 for the task-type: developing and using knowledge, within the cognitive dimension, will serve for illustration purposes. This example presents the product section only of the description; the purpose and context and process sections are not included.

> ***Product***
>
> *Learners present ideas and information in spoken and written forms such as answers to questions, a list of ideas or suggestions, a short article, a report, a short, illustrated talk e.g. they present a list of suggestions for improving the school environment, based on a talk or they present a written report or illustrated talk based on information they have gathered, selected and organized in carrying out a project in which support is provided through guiding questions on content, procedures, organization and presentation.*
>
> *Learners generally use predictable or familiar language within known topics and contexts. Their language is sufficiently accurate so as not to interfere with conveying meaning.*
>
> *Learners use short, simple sentences, often involving learned patterns e.g. My talk is about..... Where appropriate to the task, they are beginning to experiment with new phrases and structures in order to enrich their expression of meaning e.g. We must..... We can..... The building next to the school is the cinema.*
>
> *Learners are beginning to recognize relationships of different parts in a text, based on the use of discourse markers, when their attention is drawn to such relationship. They are able to structure their text by using discourse markers e.g. and, but, because, then, next, and through the appropriate use of pronouns.*

The descriptions of bands of performance do not specify what is expected at a particular age or stage. Rather, they are designed to help teachers and other users to identify evidence of progress, areas of strengths and areas requiring improvement. The descriptions draw attention to particular markers of progress which are significant at different stages, thus **progress** becomes the dominant consideration in the assessment process rather than notions of pass or fail. Teachers can use the descriptions in the bands of performance as a resource for interpreting and communicating student performance. Their value lies in the fact that they provide a common reference point for teachers in different schools when making judgements of student performance. Bands of performance, however, only provide a picture of typical growth, and not the actual picture of growth of any individual student. In using the bands of performance teachers determine the description which best matches the reality

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of an individual student's performance and use the descriptive statements as a basis for elaborating a profile description for each student.

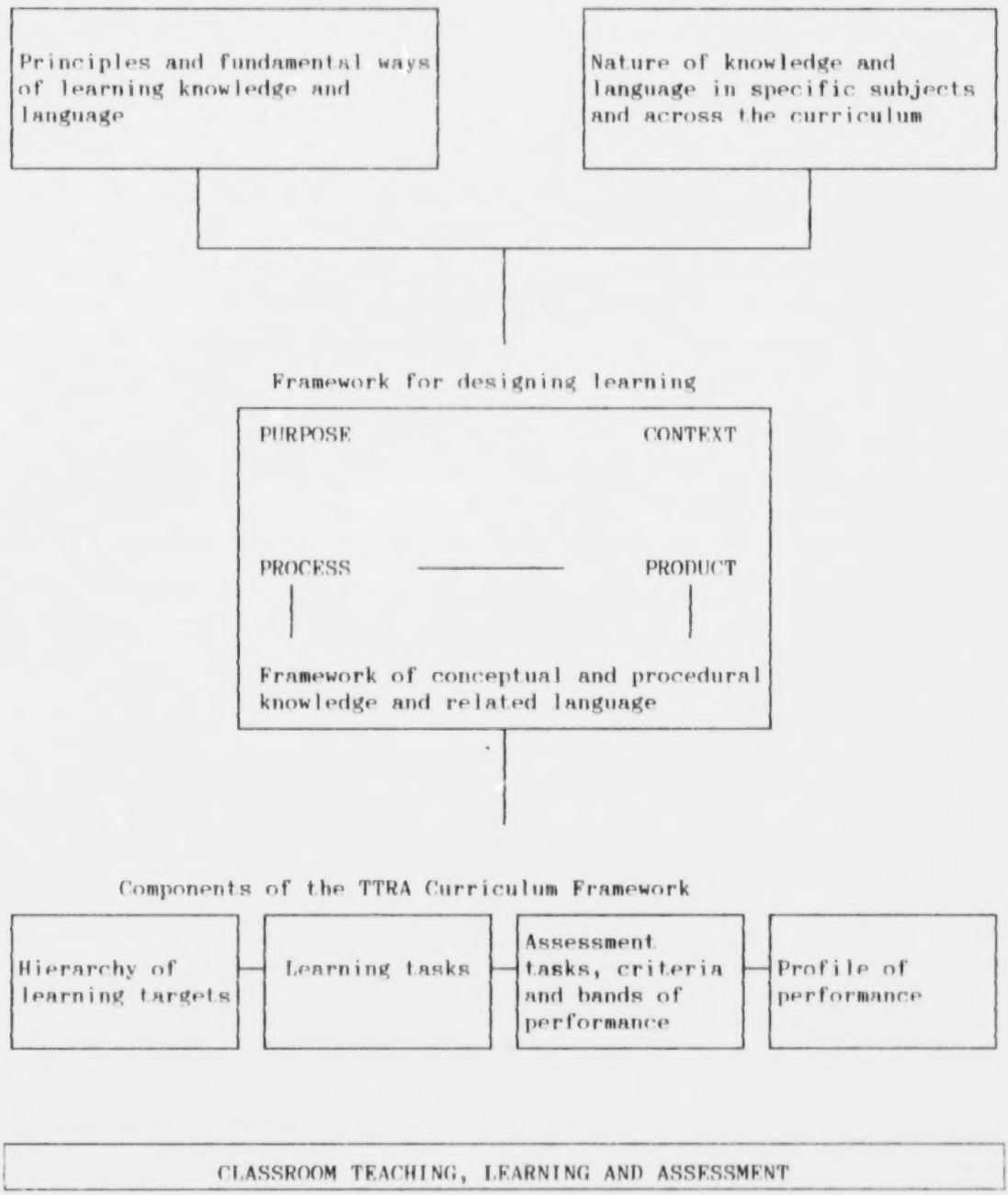
Students' overall performance and progress will be reported throughout schooling through a **profile of performance**. The profile for each individual student, describes performance within each dimension of the subject and the integrated use of the subject. It is expressed through bands of performance and accompanying comments which describe strengths and areas for improvement in students' learning and use of knowledge and language. In this way students' long-term progress is monitored, described explicitly and fostered.

Summary

In summary, our picture of content and language is one that is cross-curricular and subject-specific. It is one in which context and language are inextricably interrelated. It depicts **learning** as the construction and elaboration of frameworks of conceptual a procedural knowledge and related frameworks of language through inquiring, thinking, problem-solving, communicating and valuing. It depicts **progress** as the construction and elaboration of ever-better frameworks as a result of actively engaging in ever-more challenging uses of knowledge which are purposeful and contextualised and involve processes of thinking and doing which lead to products.

The relationship between content and language and learning in the TTRA curriculum framework is depicted in figure 5.

Figure 5: Relationship between content and language and learning in the TTRA curriculum framework


Principles and fundamental ways of learning knowledge and language
Nature of knowledge and language in specific subjects and across the curriculum
Framework for designing learning
PURPOSE
CONTEXT
PROCESS
PRODUCT
Framework of conceptual and procedural knowledge and related language
Components of the TTRA Curriculum Framework
Hierarchy of learning targets
Learning tasks
Assessment tasks, criteria and bands of performance
Profile of performance
CLASSROOM TEACHING, LEARNING AND ASSESSMENT

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IMPLICATIONS

The implications of the view of learning and using knowledge and language embodied in the TTRA curriculum framework are far-reaching and will have an impact upon individual students, teachers, school principals and the education system as a whole.

Students need to:

- assume greater responsibility for their own learning
- interact with other students
- be involved with their teachers in planning learning and assessment.

Teachers need to:

- create and adapt materials for learning to embody the principles of learning and using knowledge and language
- review and renew their current Schemes of Work on the basis of the same principles
- participate in and become increasingly responsible for their own professional development
- assume greater responsibility for planning learning, including materials development, and work together with other teachers sharing ideas and products
- develop classroom management approaches needed to support this view of learning

Principals need to:

- provide leadership in a whole-school approach to curriculum: teaching, learning, resourcing, assessment and evaluation
- develop policies and practice for language across the curriculum
- support teachers in implementing change
- inform parents and the community about developments on a regular basis.

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The education system needs to:

- adopt, through TTRA, a coherent, cross-curricular view of curriculum policy for the curriculum as a whole and all its constituent subjects - a view which promotes continuity and progression across primary and secondary phases of schooling
- develop a long-term action plan for the design, implementation and extension of TTRA to all subjects in the curriculum and to develop procedures for periodic evaluation and renewal
- establish a curriculum quality assurance process
- conduct comprehensive inservice teacher education and support schools in their curriculum renewal
- provide specifications and criteria for resources to publishers and software and hardware manufactures and suppliers.

The goal to work towards is a coherent, purposeful, contextualised curriculum which unites the learning and use of knowledge and language through engaging students in inquiring, thinking, problem-solving, communicating and valuing.

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